

DEPT. OF TRANSPORTATION DUCKET SECTION

14 Eagle's Court Cartersville, GA 30120 Phone: 770-383-3320 Fax: 770-383-3420

Air Fender Systems, Inc.

E-mail: afs@btitelecom.net

58233

June 24, 1999

ORIGINAL

Mr. Jere Medlin Office of Crash Avoidance Standards NPS - 20 National Highway Traffic Safety Administration 400 Seventh Street, SW Washington, D.C. 20590

Re: Docket No. NHTSA - 99 - 5101; Notice 7

Dear Mr. Medlin,

I just received the May 7 Federal Register regarding Splash and Spray. I saw the article in Heavy Duty Trucking. I submit this information for review by your Department and the Senate Appropriations Committee.

I would like to introduce you and the members of Congress to an Air Fender. This technological break through was developed to reduce Splash and Spray from heavy trucks and trailers. The Air Fender works in all types of conditions and cross winds. We have even tested the Air Fender under winter conditions for the past three years in Quebec City with impressive results.

The Air Fender reduces 80 - 90 % of the spray on any combination of vehicles including bobtails. Our fender is currently being run on bulk tankers, liquid tankers, flatbeds, vans, single axle tractors and double axle tractors. I have enclosed testimonies from various fleets to show the dramatic results from the Air Fender.

The Air Fender also offers an economical benefit to rigs by cooling the tires and brakes. Field tests have produced an increase of 8-22% longer tire life and 15-30% longer brake life. This is attributed to the fact that the Air Fender scoops air into the system. This is further supported by Charles' Law of PV=nRT. In the millions of miles that fleets have tested the Air Fender only one recap has come off. This has an economic benefit to the states as well. States will spend less money for highway crews to pick up recaps on the nation's highways.

The enclosed video clearly shows a complete reduction of splash and spray, which is being redirected, to the ground. Copies of the video are available for other member of your committee.

The following report will cover the Air Fender and its benefits to the motoring public. I hope that you and the members of Congress will look favorably upon this recent revolutionary breakthrough in splash and spray reduction technology.

If anyone would like further information, do not hesitate to contact us.

Thank you for your time and considerations.

Best Regards,

John C. Becker Vice President

Air Fender Systems, Inc.

Table of Contents

- I. Question and Answers
- II. What is and Air Fender
- III. Background Information
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- V. Quebec SAE J2245 Testing
- VI. Pictures of Various Applications
- VII. Brochures of Air Fender
- VIII. Video of Spray Reduction
- IX. Air Fenders Patents

Questions and Answer

1. AFS has innovative technological improvements;

Design changes—see "What is a fender"

Supporting data has been scientifically tested by the Government of Quebec in accordance with SAE J 2245 standards, using the laser method.

See narrative write up outline in large and small brochures

See Splash and Spray video of highway testing in Sumter, SC.

Driver visibility is improved –see testimonies

- 2. Government data is available for this item.
- 3. Crosswinds have absolutely no effect of the performance of AFS effectiveness applies to both the windward and leeward sides.
- 4. AFS technology is fully described and the excerpts from the SAE test under J 2245 has been included
- 5. AFS effectiveness for the elimination of splash and spray applies equally well to all makes of tractors and most trailer configurations.
- 6. See item 1.
- 7. The sell price to factory built units to the fleet user ranges from \$170.00 to \$240.00 perfender.
- 8. AFS surpasses the minimum standards for spray reduction of the ECC. AFS presently has fenders in Australia, New Zealand, Sweden, in France, soon in Italy.
- 9. The test of AFS in Quebec is acceptable data on an interim basis. AFS was tested using the Laser method as described in J2245

Summation;

Truck designs have improved by some aerodynamic shape of their units by adding fuel tank skirts, streamlined cabs, air spoilers and more-however no data has been supplied and there is no visible improvement on the reduction of splash and spray.

AFS technology simply captures the water particles and disperses it to ground level – leaving the truck driver and motorists with a clear vision at all time.

As the report is complied for filing with Congress in October 1999, AFS will be available for demonstration of its ability to eliminate splash and spray to the members of the select panel of investigators for this request.

What is an Air Fender?



Shell:

Is the part that contains all of the water and debris from the road.

Side Shield:

This part slides into the shell using a tongue and groove fit. **The** panels stop the spray from blowing outward from the wheels of the unit.

Easily removed for tread and lug nut checking.

Inlet:

The inlet is bolted to the shell using nylon nuts and bolts. Its **function** is to allow 15,000 **cu.ft.** of air into the system per mile. This air is directed up and over the tire faces as well as through the middle towards the brake drums.

Side Blades:

The side blades are bolted to the side shields using nylon nuts and bolts. These blades scoop in air and compress it. This cooler air is forced on the tire sidewalls and wheel rims- cooling both of them.

Background Information

The Air Fender idea was conceptualized in 1989 after a near death experience of the inventor John H. Becker. The problem of splash and spray was broken down into two major problems. One being rain and the other being wind.

The idea was to use the wind to control the water. Basically the faster the vehicle travels the better the Air Fender performs. Numerous fleets have given testimonies, which state from the driver's point of view what they have observed. This is very relevant. If the motorist can not see to pass the truck, the truck driver cannot see out of his or her mirrors behind the truck because of the spray.

In reading all of the reports regarding splash and spray no one mentions the problem from the truck drivers point of view, which is probably the most important because he or she is controlling the unit.

The Air Fender has a proven record of accomplishment with numerous large well known nationally recognized fleets. These will be chronicled later in this report with photographs and testimonies from their driver or management personnel.

To reduce the effects of snow in wintertime, the Air Fender is made from a polypropylene plastic. Polypropylene by nature is designed to prevent anything from sticking to its surface including paint and snow. This design function allows the Air Fender to perform equally well in the winter or summer months.

In testing during the past three years in Quebec City fleets found that the Air Fender effectively reduced the "snow blindness" that is normally associated with winter driving. Another benefit, not as much snow caked up on the units. This will reduce the amount of "ice blocks" that accumulate and fall off heavy trucks during winter driving.

The testing that has occurred in the southern United States found that in addition to significantly reducing the splash and spray, the units tires and brakes ran much cooler. This added safety benefit also has an economic benefit to the fleets. Air Fenders have been reported to eliminate brake fading by keeping the brake components cooler. This will reduce the overall stopping distance that a truck needs to stop.

The Air Fender allows compressed air to enter the system. This cooler air is blown directly on to the face and sidewalls of the tires - cooling them. Charles' Law (1867) states that pressure under constant volume will be directly affected by the temperature, therefore, by Air Fenders cooling the tires it is less likely to be affected by increased pressure and will not blow as frequently as other hotter tires.

With Air Fenders proven technology, it has clearly demonstrated a win - win for everyone from the truck drivers to the motorists. The economic payback is a win - win for the trucking companies as well as the state and federal governments.

Fleet Testing and Results

Our fleet testing was designed to cover every situation that heavy trucks may encounter while driving. This testing was not limited to just the United States and Canada. Testing is currently under way in Australia and New Zealand. Air Fenders have also been tested in Sweden, Germany and France.

Advanced Freight Systems, Inc.

This was our own trucking company that was started to do research and development as well as prototype testing. After running fiberglass fenders for three years, the drivers reported visibility out of the trucks' mirrors was dramatically improved and passing motorists were not panicking with passing the truck in the rain.

PBS Service, Inc.

PBS haul liquid and bulk sugar for a large sugar producer. The fenders were mounted on a bulk tanker and a double axle non-sleeper tractor. The President and co-founder of PBS Service personally drove the unit in a rainstorm and commented that "the spray was almost completely eliminated, and I could see clearly around the vehicle"

Transport Jacques Auger

T.J.A. operated in Quebec City hauling gasoline and fuel oil. With a gross vehicle weight more than 120,000 lbs. a double axle tractor and a four-axle tanker were mounted with Air Fenders. This test was done in the wintertime to see the effect of snow on the polypropylene plastic. Temperatures of -40 ° F were a daily occurrence. The amount of ice and snow that accumulates on a unit dropped from 2200 kilos to just 200 kilos. Snow blindness and salty road spray were significantly reduced.

This got the attention of the Quebec government, who decided to test the Air Fenders and other splash and spray systems using the SAE J2245 test method.

Polar Tank Houston Service Center

Polar Tank is one of the countries leading tank builders. Air Fenders were installed on the local pick-up and delivery truck. It is a single axle tractor. After the fenders were mounted during the first downpour in Houston, TX. the driver reported that "there is no spray coming from my truck."

HOLOX

Holox is a manufacturer of compressed gases. Holox installed Air Fenders on an Argon tanker unit. On its first trip, the team drivers reported that "the spray is gone from our vehicle. We can clearly see around the vehicle during rainstorms and the motorists can clearly see to pass us."

Quebec Testing SAE J2245

In October 1997, the Quebec Department of Transportation commissioned Laval University to conduct splash and spray tests to evaluate different spray reduction devices. In April 1998 an 88 page report was submitted by Laval University to the Quebec DOT to report their findings.

Test Procedure'

The test was based on the PLM (Photometer/Laser) method recommended by the SAE. 54 tests were conducted using five different spray reduction configurations as well a one conventional truck to establish a base line. The tests were conducted with the truck travelling 77 k/hr.

Results²

"The Air Fender systems are more efficient at a short distance from the truck, whereas the Reddaway configurations are comparable to the Air Fender system when the whole mist is taken into account"

This documented report is too long to include with the Air Fenders report to NHTSA, however if further investigation is needed or a copy of the report is desired we will be happy to get you one.

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^{1,2} Contract Report MTQ 1220-97-RG0 1 pg. 4



ÉVALUATION COMPARATIVE DES SYSTÈMES ANTI-ÉCLABOUSSURE POUR VÉHICULES LOURDS

RAPPORT DE CONTRAT MTQ 1220-97-RG01

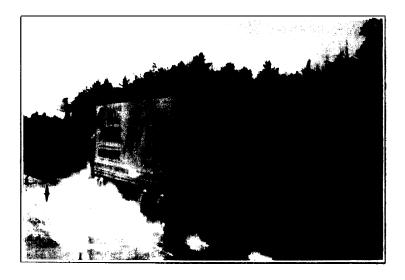
présenté à

Monsieur Mario Bussières

Direction du Transport Multimodal
Service de la normalisation technique
Ministère des Transports du Québec

par

Guy Dumas, ing., Ph.D., Jean Lemay, ing., Ph.D. Louis-Philippe BIBEAU & Louis LAMONTAGNE



Avril 1998



Laboratoire de Mécanique des Fluides Département de génie mécanique Université Laval



FIGURE 3.16: Système "AirFender".



FIGURE 3.17: Système "Reddaway"; vue du tracteur.

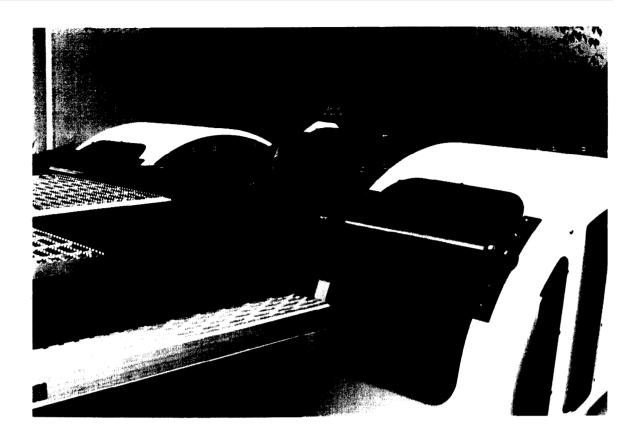
Pictures of Various Air Fenders Installations

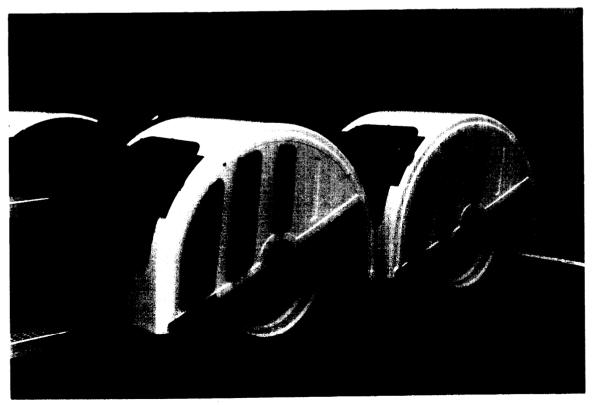




Air fender Systems, Inc. 14 Eagle's Court Cartersville, GA 30120 Phone: 770-383-3320

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"Safety That Saves"

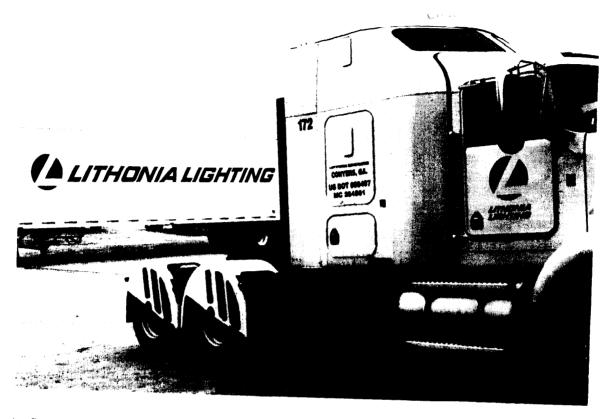
Hoyeuses Fêtes!

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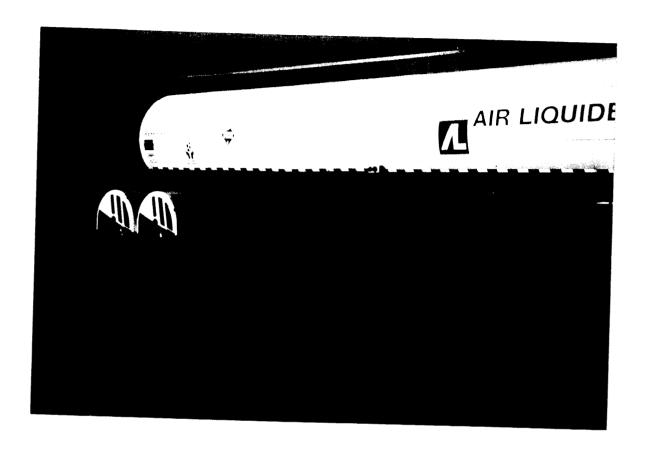


"Safety That Saves"

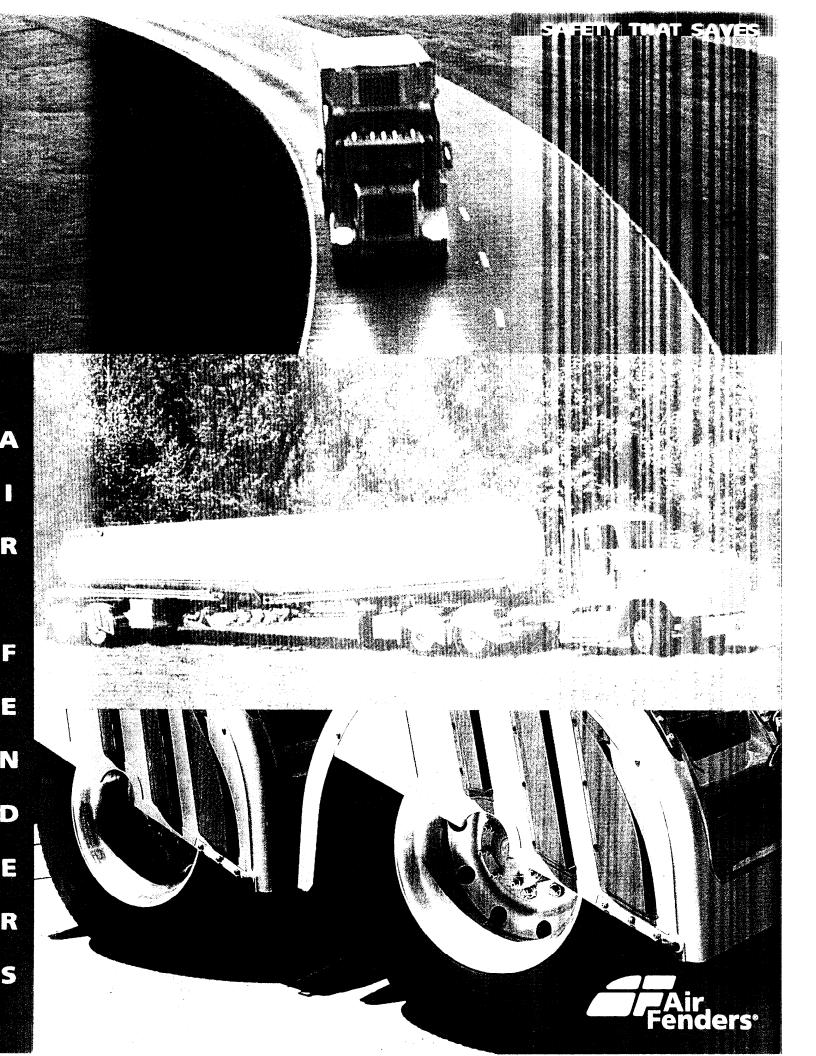


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Fax: 770-383-3420 E-mail: afs@btitelecom.net



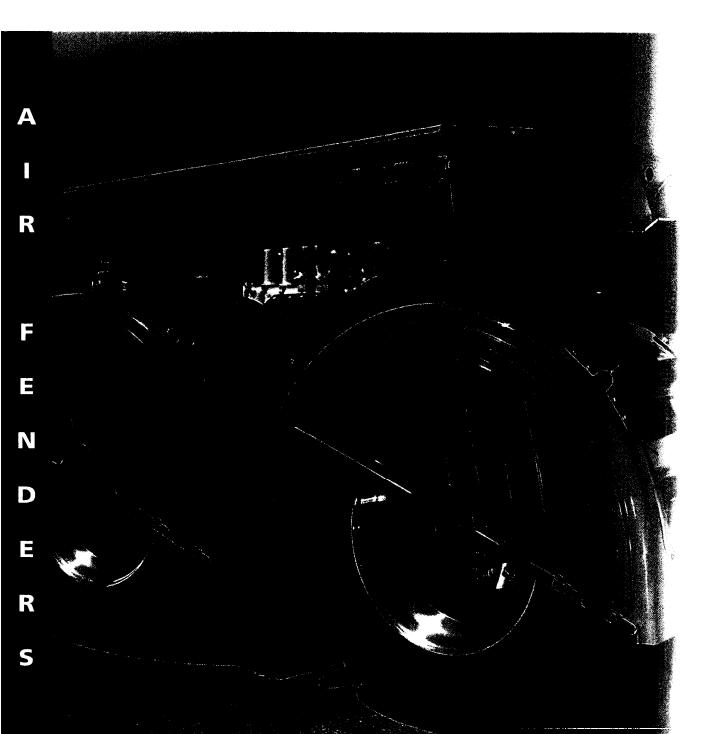




AIR FENDERS -QUITE POSSIBLY THE MOST

Driven to save and safety

During dry conditions, wheel fenders from Air Fender Systems function like the front end of a jet engine-a claim ordinary fenders just can't make. Over 15,000 cubic feet of air per mile is channeled over the tires and brakes, cooling them and resulting in more economical operation. On wet roadways, these revolutionary wheel fenders practically eliminate blinding spray, increasing visibility for motorists and truck drivers. One of the most innovative products to hit the trucking industry in years, wheel fenders from Air Fender Systems actually save money while improving safety.



ECONOMICAL WA

So innovative, they pay for themselves

Several large fleets have reported that tires and brakes last up to 20% longer in rigs with Air Fenders. Tire blow-outs are dramatically reduced, too. (If tire blow-out does occur, it's usually contained within the unit, so costly damage to taillight assembly and rear-sealed wiring is often avoided.)

When you consider the savings from less frequent replacement of tires and brakes, it takes only three to six months of normal driving before wheel fenders from Air Fender Systems actually pay for themselves.

Light and airy

At just 22 pounds, wheel fenders from Air Fender Systems weigh less than traditional metal versions. What's more, the high volume of air directed through the fender vents actually lowers tire temperatures as well as reduces tire air pressure by about 15-30 psi. (Individual results may vary)

An idea with stopping power

Other benefits of inlet and side vent air are cooler brake drums and rims, plus shorter stopping distances-even at higher speeds. And, of course, cooler brakes last longer, contributing to more cost-efficient operation.

just your size and

We understand wha That's why wheel fe feature a sleek, mod two-color combinati and trailer frame.

Built for the long haus

Made from Hivalloy r sire, light angineering polymer from Monte i Polyclefing wheel fenders from Air Fender Systems are resistant timpact, scratching and sunlight. Gas, oil and harshichemical cleaners have virtually no effect. Thoughtfully engineered for maintenance-free durability, our fenders are backed by a limited warranty against cracking and fading.

Make the right call

Wheel fenders from Air Fender Systems have received strong acceptance from major fleets as well as independent rigs.

When you consider all the cost and safety benefits, the best fender is an Air Fender.

Call us today at

I-770-383-3320.

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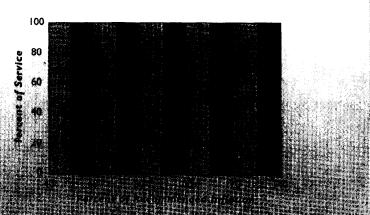
Heat is the primary cause of premature tire failure. Wheel fenders from Air Fender Systems help extend the life of tires by directing a high volume of air over tire surfaces, cooling them and keeping tire pressures in the recommended range for optimal service.



"With Air Fenders on, the high volume of air flowing around the tires and brakes reduces heat—their worst enemy—and will help prolong the life of those parts. In addition, I drove some 20 miles in a rainstorm in a truck equipped with Air Fenders—the spray was almost completely eliminated, and I could see clearly around the vehicle. One of my employees following behind me in a pickup also noticed a tremendous increase in visibility. After 47 years in the trucking business, I can honestly say that Air Fenders are a major breakthrough.

— Larry Simmons

Secretary and Co-Founder, PBS Service, Inc.









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inventor and company president Jol. Ht. Becker, the inventor of the tessor. Under development since 1989 wheel fenders from Arr Fenler ested in over a dozen states and Canada. Fleet managers and drivers established to their cost savings and added safety. Air Fenders Systems, Inc. (Atlanta area.)

. Fender y'r

1 de Georgia 30120 ■ Phone: (770) 383-3,320 □ F-ax. (770) 383-3420

999 Air Fender Lysian Code Printed in the U.S.A. Form No.AFS-101



United States Patent [19]

 \overline{z} PENDER FOR COOLING TIRES AND BRAKES AND TO CONTROL SPRAY

1/5 Inventor: John H. Becker, Sunter, S.C.

Assignee: Canada Air Friders Ltd., New Brinswick

Appl. No.: 180,048

22 Tiled: Jan. 11, 1994

<u>151</u> [5] Int. Cl.6 U.S. CT. 1162B 9/16 280/851; 280/848

58 Field of Search

280/851, 840, 280/848, 152.05

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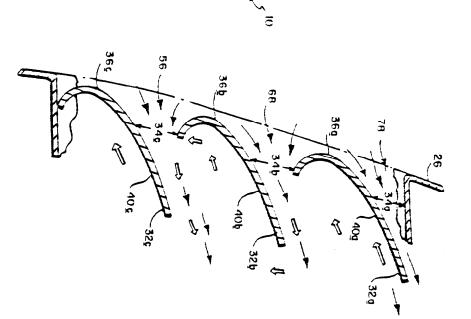
Attorney, Agent. or Firm Sarruo's, Jauthier & Stevens

ABSTRACT

1.5

the tire and brake assembly spart from the upper half of the fire. The shield has specially dimensional louvers which ensure that the flow rate of the air therethrough is uniform as discharged from the shield to cool with parabelic shape vames which centrol and discharge downwordly spray cast from the tire. A side shield is spaced A fender for a rotating tire. The fender has a leading section

11 Claims, 4 Drawing Sheets



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US005100177A

United	States	Pat	lent	[19]

Becker

[54]	TIRE SPI	RAY CONTROL DEVICE	
[76]	Inventor:	John H. Becker, 8553 Pleasa Ave., North Canton, Ohio 4	
[21]	Appl No.։	452,192	
[22]	Filed:	Dec. 18, 1989	
	Rela	ated U.S. Application Data	
[60]	abandoned	ion-in part of Ser No. 228,379, Au I, which is a division of Ser. No. 76 Pat. No.4,858,941.	
[51]	Int. Cl.5	B6	2B 9/16
[52]	U.S. Cl		280/851
[58]	Field of Se	earch	280/851
[56]		References Cited	
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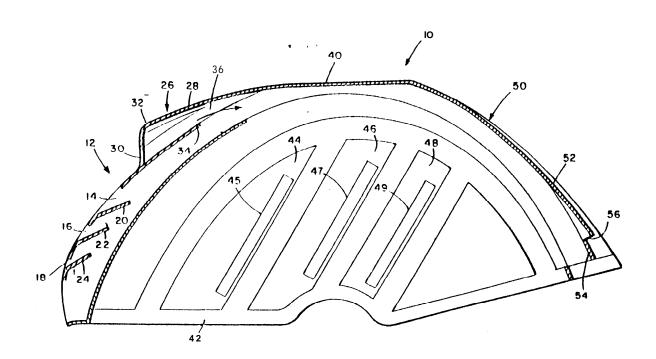
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				Germany 280/831

Itimus; Examiner.--Robert P. Olszewski Assistant Examiner.--Etic Culbreth Attorney Agent, or Firm.--Samuels, Gauthier & Stevens

| 37] ABSTRACT

A fender to control water spray and to cool tires and brakes which has a leading plate with blade-like openings. The fender further comprises a top plate, a side wall and a trailing plate. The top plate with the leading plate form an air scoop. The side walls are louvered. The air is directed to expand adiabatically to both control the spray cast from the rotating tire and to cool the tires and brakes whether or not there is spray present.

16 Claims, 3 Drawing Sheets



US00D372449S

United States Patent 3

Becker

<u>54</u> AIR FENDER SYSTEM

1761 Inventor John R. Becker, 2110 IndocPL, Sumter, S.C. 29150

14 Years

121 Appl. No.: 29,378

280/251	[58] Field of Search D12/184; 280/251,	Field of Sear	1381
1)12/184	[52] U.S. Cl. D12/184	U.S. Cl.	[52]
	Oct. 4, 1994	[22] Piled: Or	1221

280/152.1; 296/180.1

References Cited

U.S. PATENT DOCUMENTS

56

Ξ **Patent Number:**

Date of Patent:

**Aug. 6, 1996 Des. 372,449

Reppert Primary Examiner Alan P. Doughs
Assistant Examiner S. Snapp
Attorney, Agent, or Firm Samuek, Gauthier, Stevens &

CLVIN

57

The ornamental design for air fender system, as shown and described.

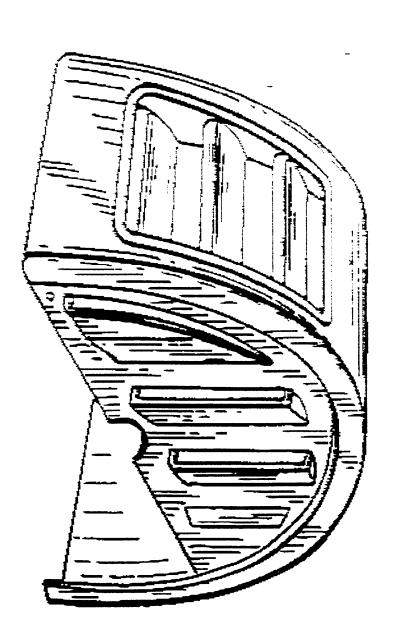
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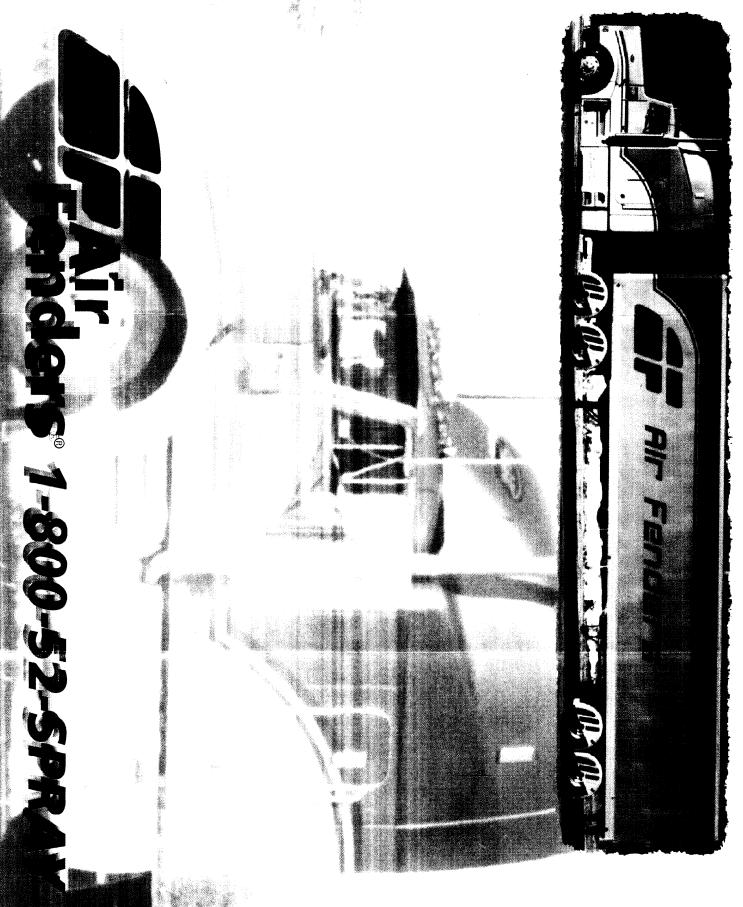
FIG. I is a perspective view of my invention;

FIG. 2 is a plan view thereof;
FIG. 3 is a right side view of FIG. 1;
FIG. 4 is a front view of FIG. 1;
FIG. 5 is a back view of FIG. 1;
FIG. 6 is a bottom view of FIG. 1;and,

FIG. 7 is a left side view of FIG. 1

1 Claim, 1 Drawing Sheet





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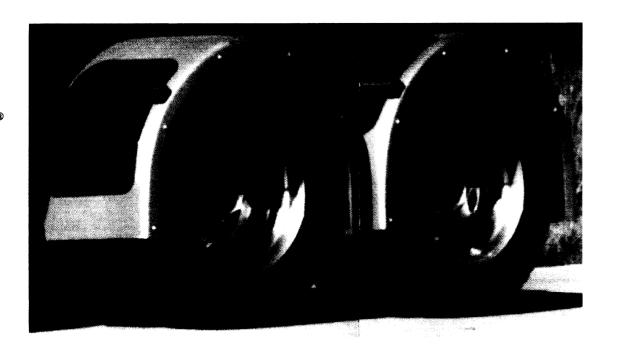
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SAFETY THAT SAVES

A Fenders Fenders

Light and Airy.

At just 22 pounds, Air Fenders weigh less than traditional metal fenders. What's more, the high volume of air directed through the vents actually lowers tire temperature. Several fleets have reported tires are lasting up to 20% longer using Air Fenders.

An idea with stopping power.

Another benefit of the inlet and side vent air is cooler brake components.

Lower tire and brake temperatures mean less "wear and tear." When you total the savings from less frequent replacement of tires and brakes, it will take the Air Fender about 14 months to pay for itself.

Just your size and color.

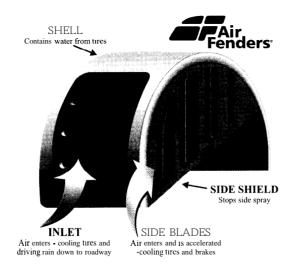
We understand how important aesthetics are to your image and the pride you take in presenting the public with an attractive rig. That's why Air Fenders features a sleek, modern design and come in a variety of two color combinations.

Not a part... A machine.

Air Fenders have been engineered to function like the front end of a jet engineer of air par mile.

Over 15,000 cubic feet of air par mile.

function like the front end of a jet engine. Over 15,000 cubic feet of air per mile is channeled over tires and brakes, cooling them, resulting in safer more economical operation. On wet roadways, these revolutionary wheel fenders control almost all of the blinding spray.



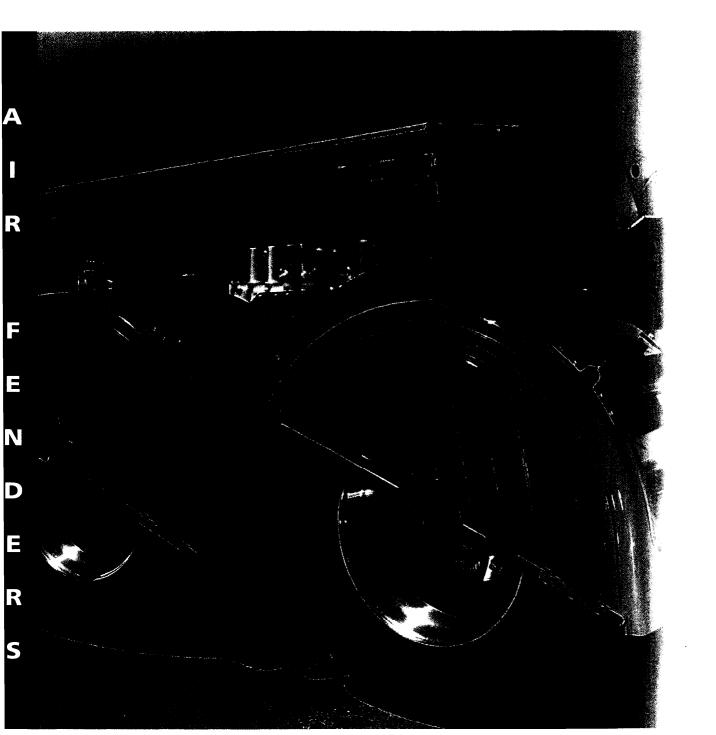
The safest, smartest, most economical way to fender a wheel.



AIR FENDERS —QUITE POSSIBLY THE MOST

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We understand wha That's why wheel fe feature a sleek, moa two-color combinati and trailer frame.

Built for the long maur

Made from Hivalloy restr. Fig. gineering polymer from Montell Polivolefin : wieel fenders from Air Fender Systems are resistant impact, scratching and sunlight. Gas, oil and harshichemical Heaners have virtually no effect. Thoughtfully engineered formaintenance-free durability, our fenders are backed by a fimited warranty against cracking and fading.

Moke the right call

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Call us today at

1-770-383-3320.

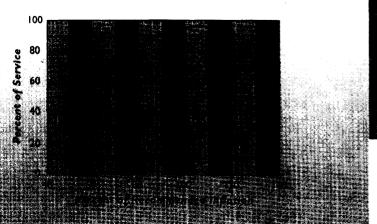
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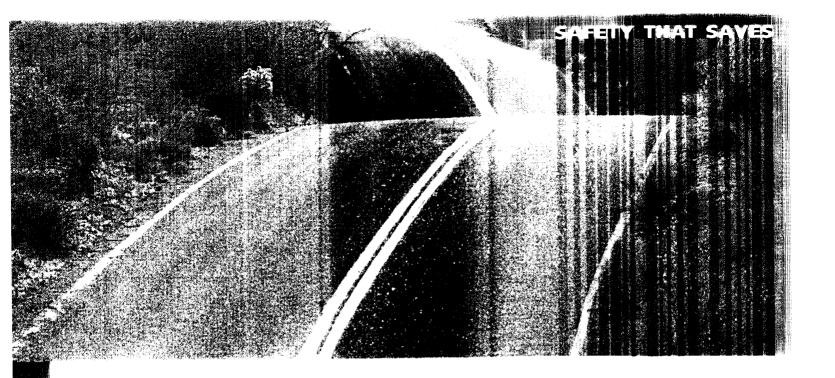
— Larry Simmons

Secretary and Co-Founder, PBS Service, Inc.









inventor and company president John Becker, he invent in of it is appressor. Under development since 1989, wheel fenders from Air Fender in ested in over a dozen states and Canada. Fleet managers and drivers assistably to their cost savings and added safety Air Fenders Systems, Inc.

Har Fender by item and table. Georgia 30120 Phone: (770) 383-3320 Fax: ("70) 383-3420

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